

# REPORT ON ELECTRIC LIGHTING INSTALLATION.

Port of Belfast  
 No. 4415 \*  
 Name of Ship "Ching Wo" Built at Belfast When built 1894-9 mo.  
 Reg. Book. \_\_\_\_\_  
 Electric Light Installation fitted by Patterson & Cooper 134 W. Regent St Glasgow when fitted September 1894

## DESCRIPTION OF DYNAMO AND ENGINE.—

*Vertical inverted cylinder Special Electric Light Engine capable of developing 8 horse power with 80 lbs steam*  
 Size of cylinder 6 inch dia 6 inch stroke coupled direct on same bedplate to a Phoenix Dynamo Speed 350 revs

Capacity of Dynamo 50 Amperes at 100 Volts, whether continuous or alternating current continuous

Where is Dynamo fixed Aft end of Engine Room Bottom platform

## LAMPS.—

Is vessel wired on single or double wire system double Total number of lights 70 arranged in the following groups:—

A <u>Saloon</u> <u>24</u> } lights each of { <u>16</u> candle power requiring a total current of <u>18</u> Amperes
B <u>Forward</u> <u>4</u> } lights each of { <u>32</u> candle power requiring a total current of <u>4.8</u> Amperes
C <u>Aft</u> <u>2</u> } lights each of { <u>16</u> candle power requiring a total current of <u>10.2</u> Amperes
D <u>Engine Room</u> <u>14</u> } lights each of { <u>32</u> candle power requiring a total current of <u>10.2</u> Amperes
E _____ lights each of _____ candle power requiring a total current of _____ Amperes
<u>1</u> Mast head light with <u>1 double filament</u> lamp each of <u>32</u> candle power requiring a total current of <u>1.2</u> Amperes
<u>2</u> Side lights with <u>1 double filament</u> lamp each of <u>32</u> candle power requiring a total current of <u>2.4</u> Amperes
<u>4</u> Cargo lights of <u>3 lamps each</u> , of <u>32</u> candle power, whether incandescent or arc-lights <u>Incandescent</u>

If arc lights, what protection is provided against fire, sparks, &c. \_\_\_\_\_

## SWITCHES AND CUT-OUTS.—

Position of Main Switch Board Beside Engine having switches to groups A, B, C, D 4 of lights as above

Positions of other switch boards and numbers of switches on each \_\_\_\_\_

If cut outs are fitted to main circuit Yes and to each auxiliary circuit Yes

and at each position where cable is branched or reduced in size Yes

If vessel is wired on the double wire system are cut outs fitted on each wire Yes at Mains & principal branches

Are the cut outs of non-oxidizable metal Yes and constructed to fuse at an excess of about 50% per cent over the normal current

Are all cut outs fitted in easily accessible positions Yes

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas \_\_\_\_\_

How are the lamps specially protected in places liable to the accumulation of vapour or gas \_\_\_\_\_

Are all switches and cut-outs constructed of unflammable materials and fitted on unflammable bases Yes

## DESCRIPTION OF CABLES.—

Main cable carrying <u>50</u> Amperes, comprised of <u>19</u> wires, each <u>16</u> legal standard wire gauge diameter
Branch cables carrying <u>22</u> Amperes, comprised of <u>4</u> wires, each <u>16</u> legal standard wire gauge diameter
Branch cables carrying <u>12</u> Amperes, comprised of <u>4</u> wires, each <u>18</u> legal standard wire gauge diameter
Leads to lamps <u>4</u> <u>.6</u> Amperes, comprised of <u>1</u> wire, each <u>18</u> legal standard wire gauge diameter
Cargo light cables carrying <u>3.6</u> Amperes, comprised of <u>140</u> wires, each <u>40</u> legal standard wire gauge diameter

The copper used has a conductivity of 98 per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than 600 megohms per statute mile after 24 hours' immersion in seawater



# DESCRIPTION OF INSULATION, PROTECTION, &c.—

Insulation of pure para rubber & two coats vulcanising rubber. India rubber proofed tape. The whole vulcanised together braided & compounded

Joints in cables, how made, insulated, and protected Spliced & soldered, then covered with two layers pure rubber tape, coated with rubber solution, then two layers of prepared tape & again coated with rubber solution

Are all the joints of cables thoroughly soldered, resin only having been used as a flux Yes

How are cables led throughout the ship In strong grooved wood casing, except through holds & cargo spaces where they are run in iron barrel

What special protection has been provided for the cables in open alleyways Avoided

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Avoided

What special protection has been provided for the cables near boiler casings Avoided

What special protection has been provided for the cables in engine room Heavy pine runs blocked from casing to prevent damage by damp

How are cables carried through decks Brass tube lined with teak wood and through bulkheads Teak wood plugs

Are any cables run through coal bunkers No or cargo spaces Yes If so, how are they protected iron pipe

Are any lamps fitted in coal bunkers or spaces which may be used for cargo Yes

If so, how are they specially protected Heavy iron shutters

Cargo light cables, whether portable or permanently fixed portable How fixed terminals mounted on slab protected by cast iron cover

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel

How are the returns from the lamps connected to the hull

Are all the joints with the hull in accessible positions

## TESTING, &c.—

Has the installation been thoroughly tested to its full capacity during a trial of 6 hours' duration Yes

The insulation resistance of the whole installation was not less than 150,000 ohms

The installation is supplied with a voltmeter and an amperemeter, fixed on Switchboard

## General Remarks.—

The whole installation is fitted with the best material, & in accordance with Fire Insurance Co's rules for land installations, & in accordance with the suggestions issued by Lloyd's Committee

The foregoing statements are a correct description of the Electric Light installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

Pro PATERSON & COOPER,

J. George Todd

SOFT. ENG. & MANAGER

Electrical Engineers

Glasgow

Date 14 September 1894

## COMPASSES.—

Distance between dynamo and standard compass 75' 0"

Distance between dynamo and steering compass 72' 6"

The nearest cables to the compasses are as follows:—

Double wiring throughout

A cable carrying Amperes feet from standard compass feet from steering compass

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Have the compasses been adjusted with and without the electric installation at work at full power

The maximum deviation due to electric currents, etc., was found to be degrees on course in the case of the standard compass

and degrees on course in the case of the steering compass.

Builder's Signature Date

A. L. Jones

Surveyor's Signature

Date 24 September 1894



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